

IN THE SPECIFICATION

p. 9, ln. 21: After “.” Insert --In this arrangement, two or more pixels are collinear with a straight line passing through the optical axis of programmable gray-scale LCD 40, so that a beam of polarized light passes through a sequence of serially aligned pixels.--

p. 10, ln. 7: After “circuitry” insert --indicated in Fig. 4 as 46 and 48 respectively--

REMARKS

Status of Claims

Claims 1-11 are pending in the application.

Claims 1-3, 6, 10-11 were rejected under 35 USC 102(b) as being anticipated by the prior art.

Claims 4-5, 8, 9 were rejected under 35 USC 103(a) as being unpatentable over the prior art in view of Johary et al.

Claim 7 was rejected under 35 USC 103(a) as being unpatentable over the prior art in view of Kobayashi et al.

The drawings were objected to under 37 CFR 1.84(p)(5) as including the reference signs “driver interface circuit” and “programmble LCD 40” not mentioned in the description.

Paper No. 8 objected to “programmble gray-scale LCD 40” on p. 2, ln. 1-11 of the amendment of January 13, 1998 as new matter introduced into the

disclosure.

Synopsis of amendment

The specification has been amended to further describe the collinear pixel sequence as claimed and shown in Fig. 4, and as further described in the specification on p. 9, ln. 19-23 and on p. 11, ln. 14-15.

Response to the objection under 37 CFR 1.84

The drawings were objected to under 37 CFR 1.84(p)(5) as including the reference signs "driver interface circuit" and "programmable gray-scale LCD 40" not mentioned in the description. Applicant traverses the objection because these reference signs are not included in the proposed revision of Fig. 4 that was included with the amendment mailed on January 13, 1998, and further because the driver interface circuit and programmable gray-scale LCD 40 are in fact mentioned in the description. Revised Figs. 3A and 4 were received by the PTO with the amendment mailed on January 13, 1998 as shown on the attached copy of the return postcard receipt stamped by the PTO mail room on January 22, 1998. Copies of Figs. 3A and 4 that were filed with that amendment and also a letter to the Official Draftsman are attached hereto for the examiner's convenience in case these drawings were misplaced.

As shown in the attached Fig. 4, the claimed driver and interface circuitry are referenced as 46 and 48 respectively, and are mentioned in the description of the originally filed application on p. 10, ln. 1-7. Likewise programmable gray-scale LCD 40 is mentioned in the description of the originally filed application on p. 6, ln. 2-8; p. 8, ln. 3-4; p. 9, ln. 2-3; p. 10, ln. 14-15, and p. 17, ln 1.

Response to the objection under 35 USC 132

Paper No. 8 objected to "programmble gray-scale LCD 40" on p. 2, ln. 1-11 of the amendment of January 13, 1998 as new matter introduced into the disclosure. The objection to "programmble gray-scale LCD 40" as new matter is unclear because the word "programmable" is misspelled in the objection and is apparently spelled correctly in the amendment and in the specification. Applicant may therefore reasonably assume that the intention of the objection was with reference to "programmable gray-scale LCD 40". The objection is also unclear because the allegation that programmable gray-scale LCD 40 is added material in the amendment is presented without explanation or substantiation. The preceding objection to the drawings, however, alleges that programmable gray-scale LCD 40 is not mentioned in the description. Applicant may therefore reasonably assume that the basis of the objection is the allegation that programmable gray-scale LCD 40 is not mentioned in the description of the originally filed application. However, Applicant has already disproved this allegation by pointing out that programmable gray-scale LCD 40 is in fact mentioned in the description of the originally filed application on p. 6, ln. 2-8; p. 8, ln. 3-4; p. 9, ln. 2-3; p. 10, ln. 14-15, and p. 17, ln 1. Because the objection to new matter is based on a false premise, the objection is improper, and Applicant requests that the objection be withdrawn.

In view of the fact that programmable gray-scale LCD 40 is irrefutably and specifically embraced in the description of the originally filed application, further mention of it in the amendment to identify reference signs in the drawings is proper and does not introduce new matter into the disclosure as alleged in the objection. Applicant therefore requests that the requirement to cancel the references to programmable gray-scale LCD 40 in the amendment of January 13, 1998 be withdrawn.

Response to the rejection under 35 USC 102(b)

Claims 1-3, 6, 10-11 were rejected under 35 USC 102(b) as being anticipated by the prior art. The rejection argues that the prior art illustrated in Figs. 1-3 discloses all the elements claimed including the claimed multiple display pixels aligned collinearly along the beam of polarized light. Paper No. 8 presents two arguments on page 5 to support the rejection.

First, the rejection argues that there is no support for the claimed collinear pixel sequence. P. 9, ln. 19-23 describes the “serial arrangement of pixels in optically coupled independent displays.” The term “serial arrangement” is another way of expressing the series or sequence of display regions 10 shown in Fig. 4. The pixels are optically coupled so that a pixel in the first display region 10 is “serially aligned”, as it is termed on p. 11, ln. 14-15, with another pixel in the second display region 10. To be optically coupled in a serial alignment, the pixels must lie on the optical axis of display regions 10 along which a beam of polarized light is directed, i.e. the pixels are collinear along the beam of polarized light. Because the optically coupled serial arrangement of pixels described in the specification has the same meaning as the claimed collinear pixel sequence, the limitation is supported by the specification.

Second, the rejection argues that Figs. 1-3 show an array of pixels aligned collinearly along the beam of light because the word collinear broadly means “sharing the same straight line as two points or plane”. The definition quoted by the rejection appears to be incorrect, since “the same straight line as two points or plane” does not appear to make sense grammatically. Webster’s New Collegiate Dictionary defines collinear as “lying on or passing through the same straight line.” This definition makes sense grammatically, and it means that at least two pixels must lie on the same straight line as the beam of polarized light. As shown

in Fig. 4, liquid crystal regions 10 are serially aligned along a straight line to intercept a beam of polarized light. The straight line defined by the beam of polarized light connects a pixel in the first liquid crystal region 10 with a pixel in the second liquid crystal region 10. There are therefore two pixels lying on the same straight line along the optical axis of liquid crystal regions 10. In Figs 1-3 illustrative of the prior art, however, the beam of polarized light passes only once through a liquid crystal medium 10. There are no additional pixels in a serial alignment with a pixel in the single liquid crystal that share the same straight line as the beam of polarized light. Because the prior art shows only single pixel lying on the same straight line as the polarized beam of light, Figs. 1-3 of the prior art do not show the claimed pixel sequence.

For example, suppose a gun is shot at a facing target. Each bullet puts one hole in the target. Each hole is aligned or collinear with the line of aim. Now suppose a second target is placed behind the first. In this arrangement each bullet makes two holes collinear with the line of aim, one hole as the bullet passes through the first target and one hole as the bullet passes through the second target. The two holes are serially aligned along the line of aim. The targets correspond to liquid crystal display regions 10, the line of aim corresponds to the optical axis along which a beam of polarized light is directed, and the two holes correspond to the claimed pixel sequence. In the former example, one bullet makes only one hole, i.e., only a single pixel lies along the beam of polarized light. In the latter example, one bullet makes a two holes serially aligned along the line of aim, i.e., two pixels are serially aligned along the beam of polarized light. The serial arrangement of pixels provided by the combination of liquid crystal media 10 is not anticipated by the prior art.

Response to the rejection under 35 USC 103(a)

Claims 4-5, 8, 9 were rejected under 35 USC 103(a) as being unpatentable over the prior art in view of Johary et al. The rejection argues that Johary's gray scale control is collinearly aligned to pixels. Applicant traverses the rejection because the rejection fails to consider all the limitations of the claim. Applicant is claiming a pixel sequence comprising multiple liquid crystal display pixels collinearly aligned along the beam of polarized light and a gray scale control coupled to at least one pixel of the pixel sequence, not a gray scale control collinearly aligned to pixels as alleged in the rejection. The rejection is therefore based on a false premise. Applicant further traverses the rejection because Johary does not teach or suggest the claimed gray-scale control coupled to at least one pixel of the claimed sequence of pixels collinearly aligned along a beam of polarized light. Because Johary does not teach the claimed combination of the claimed gray-scale control and the claimed collinearly aligned pixel sequence, claims 4-5, 8, 9 are not obvious under 35 USC 103.

Claim 7 was rejected under 35 USC 103(a) as being unpatentable over Kobayashi et al. The rejection argues that because Kobayashi teaches using sapphire for the claimed substrate of the claimed liquid crystal display, it would be obvious to include Kobayashi's sapphire substrate into the devices of the prior art. Applicants traverse the rejection because the prior art cited by Applicant does not teach or suggest the structure of the claimed collinearly aligned pixel sequence as explained above. The combination proposed by the rejection therefore fails to meet the claimed invention. Because the claimed collinearly aligned pixel sequence is not arrived at by the suggested incorporation of Kobayashi with the other prior art, claim 7 is not obvious under 35 USC 103.

Conclusion

Because the rejections of claims 1-11 are unsubstantiated, Applicant requests that the rejections be withdrawn and that the claims 1-11 be favorably reconsidered.

The telephone number for Applicant's agent signed below is (619)553-3001.

No additional fee is required for this amendment.

Respectfully submitted,



Eric James Whitesell

PTO Registration No. 38,657